



USDA Forest Service - Southern Research Station - 320 Green Street Athens GA 30602 - <http://www.srs.fs.usda.gov/disturbance>



Table of Contents	
Technology Transfer	1
Outreach Activities	1
Meetings/Report	2
Partnerships	3
Science Highlight	3
Safety	5
Visitors	5
Personnel News	5
News from Around the Region	5
Publications	7
Upcoming Events	8
GPRA Accomplishments	9



Outreach Activities:

- The Forestry Source published by the Society of American Foresters carried an article about the 2005 Boy Scout Jamboree. The article featured Richard Reitz in quotes and a photograph.

Technology Transfer:

- Christa Dagley attended the Society for Ecological Restoration 17th International Conference, held in Zaragoza, Spain. Christa presented early results from her Ph.D. work, "Targets for restoration of old-growth redwood forests: Quantifying horizontal and vertical structure."

modeling projects being conducted by the Smoke Management Team. Agencies represented were USDA Forest Service Region 8 and Athens, EPA Region 4 – Atlanta, and EPA-RTP.

- Yongqiang Liu and Gary Achtemeier attended the NOAA/EPA Golden Jubilee Symposium on Air Quality Modeling and Its Applications in Durham, NC. Yong Liu presented a poster entitled "What parameters are the most important to smoke plume rise?" authored by Yongqiang Liu, Gary Achtemeier, and Scott Goodrick. Gary made a presentation on "A coupled modeling system for connecting prescribed fire activity data through CMAQ for simulating regional scale air quality," coauthored with Scott Goodrick and Yong Liu.

- Yong Liu attended the 2005 CMAQ Workshop held in Chapel Hill, NC and while in the area, Yong visited the Department of Civil and Environmental Engineering, Duke University where he gave a seminar entitled "Regional climate change due to smoke aerosols."

- Gary Achtemeier presented a talk on Forest Service goals for fire activity data at the Fire Emissions Inventory Development meeting at Atlanta, GA. The meeting was hosted by the State of Georgia Environmental Protection Division (EPD). Agencies represented were EPD, Georgia Forestry Commission, EPA Region 4, and USDA Forest Service Athens. The purpose of the meeting was to identify common research needs for fire activity data.

- Ken Outcalt made an invited presentation at the Workshop on Longleaf Pine Restoration held at the J.W. Jones Ecological Research Center in Newton, Georgia. Ken's presentation was "Herbicide use in longleaf pine uplands."

- Gary Achtemeier and Scott Goodrick attended the Southern Area Interagency Smoke Management Meeting at the EPA Regional Office in Atlanta. Scott gave a brief presentation on the Florida Division of Forestry's Fire Management Information System and Smoke Screening Tools, while Gary provided overviews of the various

- Gary Achtemeier participated in a discussion with representatives of EPA Region 4 and the USDA Forest Service Washington Office on ways to provide air quality data to interests in Louisiana and Mississippi who will be charged with burning off some 50-million tons of debris from Hurricane Katrina. Our contribution will be to bring BlueSky online and provide Ventilation Index and wind trajectories for selected sites over the Gulf Coast, with assistance from the PNW AirFire group.

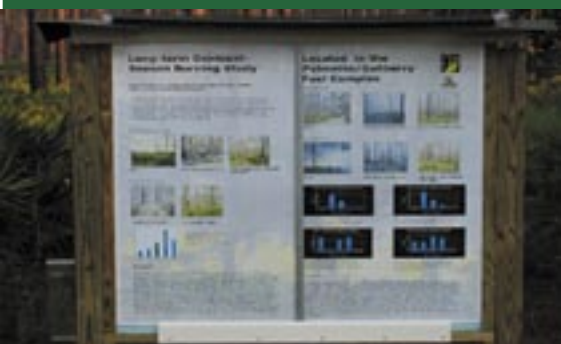


Fuels Treatment Workshop

Solon Dixon Forestry and Education Center
October 27, 2005



Space is limited to first 100 participants:
Call Rhett Johnson at 334-222-7779 or e-mail johnsee@auburn.edu



Ken Outcalt has just erected displays at the Osceola Long-term Burning Study, explaining the study and giving early results.

Technology Transfer:

• John Stanturf attended the Workshop and meeting of the Scandinavian Disturbance Network, “The scale of natural disturbances from tree to stand,” sponsored by Lithuanian Forest Research Institute and Institute of Forestry and Rural Engineering of Estonian Agricultural University, held in Vilnius and Palanga, Lithuania. John presented a paper “Disturbance in the face of climate change: Incorporating disturbance into management of coastal forests”; co-authors were Peter Burbridge (University of Newcastle), Emile Gardiner (SRS-4155) and Jim Perdue (SRS). The highlight of the program was a field trip to the Curonian Spit, a Pleistocene glacial landform along the coast. The Curonian Spit is a 98 km-long barrier island with 67 m high sand dunes that create a lagoon on the landward-side (the coast of Lithuania and Russian Kaliningrad). Cleared of native broadleaved forests in the 1600s, shifting dunes led to a restoration effort in the 1900s that included dune stabilization and revegetation; forest vegetation today is mostly Austrian and Scots pines (*Pinus mugo* and *P. sylvestris*) although small remnants of the broadleaved forest, mostly oak and beech, can be found around villages. Chris Peterson, Professor of Botany at UGA and cooperator with the unit, was an invited keynote speaker at the meeting and presented his work on wind disturbances in North American forests.

• Ken Outcalt will host the annual Fire and Fire Surrogate meeting at the Solon Dixon Forestry and Education Center, Andalusia, Alabama, from October 18 to 20. The Science and Management Integration Committee, consisting of investigators from the 13 FFS sites around the country, will gather to discuss on-

going research and become acquainted with the Solon Dixon study site. Tom Waldrop will also attend the SMIC meeting.



Rainfall Exclusion—A low-tech approach to studying the effect of lowered rainfall; Lithuanian Forest Research Institute study in Scots pine, Kaunas District



Dunes—Sand dunes on the Curonian Spit, a 98-km long Pleistocene landform along the coast of Lithuania.

Meetings/Reports:

• Dave Cleland and Dave Maercklein (Hiawatha NF) met with the Michigan DNR and TNC representatives to discuss data sharing and collaborative planning opportunities. The Forest Service maps of ecological units, biophysical units, preliminary fire risk assessment, and data on historical and modern vegetation and disturbance were distributed to the state.

• John Stanturf attended the Forest Service Research Advisory Committee meeting in Denver, his last meeting as Chair. Under Chair Mike Ryan (RMRS), Rakesh Minocha, a Research Chemist in the Northeastern Research Station (soon to become the Northern Research Station), was elected Vice-Chair. The Committee provided input to the USDA Office of Ethics on a possible waiver for Forest Service employees to serve as officers of certain scientific and professional organizations as part of their official duties.

• Dave Cleland presented the results of the Lake States Fire Risk Assessment to the Great Lakes Forest Fire Compact in East Lansing Michigan. The Michigan and Wisconsin Departments of Natural Resources and Forest Service personnel will meet this fall to review the assessment, incorporate local expertise, and adopt the final product for statewide fire management information needs.

• Ken Outcalt and Richard Reitz met with the folks from the forest encyclopedia network, who were meeting in Athens, to update them on the Encyclopedia of Southern Fire Science. This meeting provided an opportunity for Ken and Richard to meet the people who will assist with many of behind the scenes technical aspects of uploading and maintaining a technical transfer product of this design. The Fire Encyclopedia is expected to premier in November.

• John Stanturf has been invited to participate in an ethics panel focusing on scientist participation in outside organizations, including adjunct faculty, at the Assistant Directors/Program Managers National Meeting, to be held in Cool Font, West Virginia on Nov 15.

• John Stanturf has been invited to participate in the Workshop on Climate Variability, to be held in Placerville, California October 11-13.

Partnerships:

- Scott Goodrick represented the Southern High Resolution Modeling Consortium (SHRMC) in discussions with other members of the Fire Consortia for Advanced Modeling of Meteorology and Smoke (FCAMMS) about possible collaborations with NASA and the National Institute of Standards and Technology (NIST). David Lary, a researcher at NASA's Goddard Spaceflight Center, approached the FCAMMS about combining his research into artificial neural networks with the FCAMMS work on modeling smoke from prescribed fires as well as using his technique as a means to speed up computationally intensive models such as Los Alamos National Lab's Firetec coupled fire-atmosphere model.

- In other discussions, Ruddy Mell and Ron Rehm of NIST talked about work their group has done to model structural fire behavior and smoke plume dynamics from oil pool fires. Ruddy Mell is in the process of comparing their coupled fire-atmosphere model to several field experiments on grass fires in Australia and was seeking assistance in adding Firetec simulations of these experiments to the comparison. Scott Goodrick has agreed to help in the comparison study by performing the required Firetec simulations.

- Mac Callaham visited the Nature Conservancy's Tallgrass Prairie Preserve near Pawhuska, Oklahoma to consult with personnel from the University of Tulsa conducting soil remediation research. The 40,000 acre preserve is the site of extensive petroleum production, and several hundred acres are impacted by oil and brine contamination resulting from oil pumping operations. Kerry Sublette, Professor of Chemical Engineering at University of Tulsa, hosted Callaham for this trip. Sublette and colleagues are conducting several trials involving earthworms as final treatments in bioremediation of contaminated sites and Mac suggested some modifications to make the worms happy.



John and a new Lithuanian friend. John is the fuzzy one.

Science Highlight: Impact of Forest Management on Wood Quality of Southern Pine

Author Alexander Clark III



Using an hydraulic-powered wood borer to extract 12 mm cores from loblolly pine trees in order to analyze wood properties..

The South produces 15 % of the wood harvested in the world and 60 % of the wood harvested in the United States. Over 90% of the forested land in the South is owned by non-industrial landowners and industry. Private forest landowners face many challenges including changing environmental policies that will reduce the land available for wood production. As we move into the 21st century, more wood will need to be produced from fewer acres and a greater proportion of the softwood harvested from private lands will come from young, fast growing plantations.

The pressure to reduce rotation length in order to maximize return on investment has led to more reliance on intensively-managed plantations with practices that accelerate early growth of the trees. The pine pulpwood industry in the South now uses intensive cultural treatments such as vegetation control, fertilization, and planting of genetically improved seedlings to increase tree growth. The combined effect of these intensive environmental treatments is positive and

significant: trees grow faster. Nevertheless, this faster growth affects lumber strength, stiffness, dimensional stability, pulp yields, and paper properties in ways that are not completely understood. We do know that intensively managed pines grow rapidly during the early years of the rotation, reach merchantable size at a younger age, and may contain a significantly higher proportion of juvenile wood. These effects raise the concern that the wood may not be optimal for use in traditional products.

Separating the effects of forest management, environmental factors, and genetics on wood properties is important to optimizing management of intensively-cultured plantations. The key is determining the amount and properties of juvenile wood. Juvenile wood is a cylinder of material surrounding the pith extending the length of all trees and is produced by young cambium in the live active crown. The faster a tree grows during the first few years of a rotation the larger the diameter of the juvenile core in the lower bole. Wood from young, fast growing pine plantations often has physical and mechanical properties that make it less desirable for traditional products such as structural lumber, panels, or paper. Juvenile wood has a higher proportion of earlywood-type tracheids and thus lower specific gravity, thinner cell walls, wider microfibril angles, and less latewood than mature wood. Because of the characteristics of its tracheids, juvenile wood has lower strength and stiffness, more longitudinal shrinkage, and less radial and tangential shrinkage than mature wood.

Juvenile wood significantly reduces the strength and stiffness of dimension lumber and increases

Baseline stands by physiographic region



Loca-

loblolly pine plantations sampled for wood properties.

tion of 124 baseline



the proportion of lumber downgraded because of drying defects. Structural lumber containing juvenile wood has significantly lower stiffness and lumber containing juvenile wood may not meet safety design specifications. Because of the high compaction of juvenile wood, it takes more juvenile wood to produce a composite panel compared to the amount of mature wood needed. Large volumes of juvenile wood in a mill's furnish will result in composite panels with lower stiffness and lower dimensional stability than if the mill made panels from mature wood. Pulp yield is lower from juvenile wood than mature wood. Paper produced from juvenile wood pulp has good tensile, burst, fold and sheet smoothness but significantly lower tear strength and opacity.

Our unit conducts research on the effects of forest management and the environment on wood quality and tree growth of southern pine, mainly in partnership with industry and academia through the Wood Quality Consortium. The southern pine wood industry formed the Wood Quality Consortium in 1999 with our unit and the Warnell School of Forest Resources at the University of Georgia. The Consortium was originally formed with eight industrial members under a five-year agreement. The Consortium has just begun its second five-year contract and has grown to ten members. The director of the Consortium is Professor Richard F. Daniels; Alexander Clark of our unit serves as a co-director along with Laurence Schimleck, Assistant Professor at the Warnell School of Forest Resources.

The Consortium completed three large studies during the past five years: baseline, rotation age, and impacts of intensive forest management. The objective of the Baseline Study was to develop a comprehensive baseline of data for conventionally-managed planted loblolly pine across a matrix of conditions throughout the South, in order to determine the effects of environmental factors and stand variables on wood properties such as specific gravity, tracheid length, microfibril angle and their relationship with stiffness, strength and dimensional stability of wood. The objective of the Rotation Age Study was to determine the effect of geographic location, rotation age and rate of growth on plantation loblolly pine strength and stiffness. Baseline Study results show that specific gravity, which is directly correlated with lumber strength, stiffness and pulp yield, varies significantly across the range of planted loblolly pine. Results



Wood sample being tested in static bending machine..

show that wood specific gravity is significantly higher in trees growing in the North Atlantic, South Atlantic and Gulf Coastal Plain compared to that of trees in the Piedmont or Hilly Coastal Plain. The trees in the Atlantic and Gulf Coastal Plain have a higher specific gravity because they produce a larger proportion of their annual ring in high specific gravity summer wood or latewood. Trees growing in the Atlantic and Gulf Coastal Plains produce more latewood because these regions have a longer growing season and receive more late summer precipitation than the Piedmont or Hilly Coastal Plain. Results of the Baseline study also show that length of juvenility, the number of years a tree produces juvenile wood at a fixed height, decreases from northwest to southeast across the loblolly pine range. In the Piedmont and Hilly Coastal Plain the length of juvenility based on specific gravity averaged 9-11 years compared to 6-8 years in the Atlantic and Gulf Coastal Plains. Data collected in the Baseline study also show that microfibril angle (MFA) at breast height varies across the loblolly range. MFA decreases from wide MFA in the juvenile wood to low MFA of mature wood by age 9-10 in trees growing in the South Atlantic, Gulf and Hilly Coastal Plain, as compared to 12-20 years in the Piedmont and North Atlantic Coastal Plain. These regional differences in MFA are likely genetic and related to seed provenance.

Wood strength is highly correlated with wood specific gravity and increases with increased specific gravity. Wood stiffness is highly correlated with both specific gravity and MFA. Stiffness increases with increased specific gravity and also increases as MFA decreases. Thus, loblolly pine wood strength and stiffness vary from region to region across the south. Results of the Baseline and Rotation Age Studies show that clear wood from young planted loblolly pine growing in all regions has the strength or MOR to meet or exceed No. 2 and better dimension lumber design values but that juvenile wood and young

mature wood from some regions fail to meet the stiffness or MOE specifications of No. 2 lumber. Results show that by age 15, trees in the South Atlantic Coastal Plain and Gulf Coastal Plain are producing wood with the stiffness required to meet No. 2 lumber stiffness specification. However, even at age 25 trees growing in the northern region of the North Atlantic Coastal Plain, Piedmont and Hilly Coastal Plain fail to produce wood with the stiffness required to meet the design specifications of No. 2 lumber. These preliminary results indicate that longer rotations may be required in the northern regions of the loblolly range to produce wood with required stiffness for lumber and engineered forest products.

The objective of the Impact of Intensive Forest Management on Wood Quality Study was to quantify the effects of competition control through herbicide application, fertilization in combination with competition control, and different levels of mid-rotation fertilization on basic wood properties and interactions with soils and geographic location. Results show woody plus herbaceous competition control significantly increased growth at all locations, did not significantly reduce ring specific gravity of earlywood or latewood, and did not significantly affect proportion of latewood in the annual ring. Woody plus herbaceous competition control did significantly increase growth during juvenile wood formation in years 1 to 5 and thus increased the diameter of the juvenile wood core by an average of 19 percent over no competition control through age 15.

Nitrogen fertilization significantly increased annual growth for 3 to 5 years after application but specific gravity of earlywood and percent latewood were not significantly affected by the added nitrogen. However, the specific gravity of the latewood decreased significantly with increased application of nitrogen. Results of static bending tests show no significant reduction in wood strength or stiffness in trees receiving moderate amounts of added nitrogen (e.g., 100 or 200 lbs per acre) but the trees receiving 300 lbs per acre nitrogen produced wood with significantly lower strength and stiffness. High levels of N fertilization apparently stimulate rapid cell division and earlywood and latewood tracheid formation but not latewood secondary wall thickening. This reduces latewood specific gravity, strength and stiffness.

↓ Visitors

• Heidi Bigler-Cole a social scientist from the Pacific Northwest Research Station in LeGrande Oregon visited with Ken Outcalt on September 14 and 15. They traveled to and toured the Fire and Fire Surrogate Study at Myakka River State Park. Enroute they erected a display at the Long-term Burning study on the Osceola National Forest. Heidi was here gathering information on technology transfer techniques and how scientists pass information and interact with their customers.

• Dan Yaussy, Project Leader from Delaware, OH., and Heidi Bigler-Cole, Social Scientist and Technology Transfer Specialist from LeGrande, OR., visited Tom Waldrop to discuss plans for a workshop to be held in January. The workshop will highlight research results and applications for the National Fire and Fire Surrogate Study (NFFS) sites in Ohio, North Carolina, and South Carolina. Yaussy and Waldrop are co-hosting the meeting. Bigler-Cole is helping to plan the meeting format so that it will provide feedback from the target audience, land and fire managers. The group toured the Green River Game Land NFFS site while discussing meeting options.

• Dr. Ed Brannon, the featured speaker at this year's Clemson University Hartzog Lecture Series, met informally after the presentation with the Uplands Ecology Team. Brannon, a Forest Service retiree, last served as Supervisor of the Flathead National Forest in Montana and is currently Director of Grey Towers National Historic Site in Milford, Pennsylvania. Brannon spoke about Gifford Pinchot and the history of the Forest Service. This lecture is sponsored each year by Clemson's Department of Parks, Recreation and Tourism Management. The annual Hartzog Lecture Series began at Clemson University in 1980 when William Everhart presented Clemson with a financial gift in the name of George B. Hartzog Jr., director of the National Park Service from 1964-1972.



Dr. Ed Brannon Director of Grey Towers National Historic Site in Milford, Pennsylvania

↓ Personnel News:

• Joe O'Brien rescues science from Hurricane Katrina! See details in this month's special addendum, Science in the Eye if the Storm.



• Matt Reilly has accepted a Term position as Botanist with the Unit. He will be starting on October 11 and will be doing vegetation surveys across the region. Matt has just finished an MS in Forestry at the University of Georgia.

↓ Safety:



Unit staff enjoyed lunch at the safety meeting before watching a video on Lyme disease.

↓ News from Around the Region:

• Risto Päivinen is the newly selected Director of the European Forest Institute, for five years, as of January 1st, 2006.. Prof Päivinen has been working at EFI since its establishment in 1993, first as the Deputy Director and then since 2000 as the Director.

• Dave Cleaves has been selected as Station Director of the Rocky Mountain Research Station (RMRS) and Sam Foster will replace Dave as Director of Resource Valuation and Use Research. Dave Cleaves has been in his current position since March 2003; Dave's specialty is decision science and risk analysis. Prior to starting his Forest Service career, he was a professor of Forest Economics at Oregon State University.

• Sam Foster is currently the National Program Leader for Silviculture and Genetics Research on the Vegetation Management and Protection Research Staff, a position he has held since December 2003. He also served as Acting Director for the Wildlife, Fish, Water, and Air Research Staff for 14 months during 2004 and 2005. The first 12 years of his career (1976-1988) were with private industry, largely in research and development. During a break from federal service, he was Dean of the College of Forest Resources and Director of the Forest and Wildlife Research Center at Mississippi State University.

• Because of budgetary constraints, the SAMAB Cooperative has eliminated the Executive Director position that Robb Turner has held for six years. Turner's term as Executive Director was marked by numerous accomplishments, which many of you have followed through SAMAB news briefs and SAMAB conferences. Among the significant accomplishments is the wide support he built for citizen monitoring, focused on invasive plants and water quality and enabled through partnerships with the USDA Forest Service, the National Park Service, the National Forest Foundation and the Appalachian Trail Conference. The Executive Committee has established a new, part-time Program Manager; Susan Schexnayder, who has been selected as the new Program Manager, has worked for many years as the outreach and education coordinator for SAMAB. The SAMAB office will continue to be supported through the University of Tennessee. You can reach SAMAB by email at samab@utk.edu; by phone at 865-974-4583; or at <http://www.samab.org>.



News from Around the Region:

- The Department of Forest Science at Texas A&M University has merged with the Department of Rangeland Ecology and Management, the department from which Forest Science evolved some 38 years ago. C.T. "Tat" Smith, former department head of Forest Science, left this summer to become Dean of the Faculty of Forestry at the University of Toronto.

- CIFOR, the Center for International Forestry Research in Bogor, Indonesia, is looking for a new Director General who can lead research that shows how to use tropical forests to address the challenges of poverty, disease, environmental destruction, corruption, discrimination, and violence. You can find all the relevant information on the upper right corner of CIFOR's web page, <http://www.cifor.cgiar.org> (or you can click directly on the following hyperlink: http://www.cifor.cgiar.org/docs/_ref/jobs/dgsearch/index.htm)

- Anderson-Tully Company (ATCO) and Heartwood Forestland Fund V, L.P., an affiliate of The Forestland Group, LLC (TFG), have entered into a definitive merger agreement by which TFG will acquire all of the outstanding shares of ATCO for approximately \$500,000 per common share in cash, implying an enterprise value for the Company of approximately \$465 million. Completion of the transaction is subject to a shareholder vote, clearance under the Hart-Scott-Rodino Antitrust Improvements Act, approval under the Mississippi River Timberlands Control Act and other customary closing conditions such as a timber inventory. The transaction is expected to close in early 2006. ATCO is a real estate investment trust and owner of over 323,000 acres of hardwood timberland in Tennessee, Mississippi, Louisiana and Arkansas. Founded in 1889 and headquartered in Memphis, Tennessee, it also operates North America's largest hardwood sawmill complex in Vicksburg, Mississippi. TFG manages over 1.8 million acres in sixteen states in the eastern United States. TFG, based in Chapel Hill, North Carolina was formed in 1995 to pursue investments primarily in naturally regenerating hardwood and pine forests for institutional, family and individual investors. In 2005 TFG earned FSC certification; it is the only TIMO in the world to have its entire portfolio certified according to FSC standards.

- The WO has issued its first "omnibus" newsletter replacing the varied other missives such as "Fish Tales." It can be seen at: http://www.fs.fed.us/biology/main/wfw_newsletter/wfw_newsletter.html

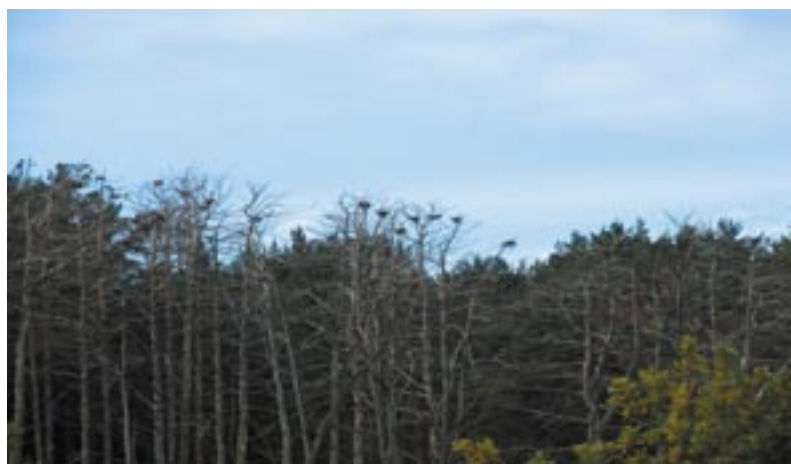
- The Commission on Ecosystem Management of IUCN, the World Conservation Union, has adopted Ecosystems Services as its new theme. The overall objective of this theme is to improve the knowledge base on ecosystem services and values and to stimulate the integration of this knowledge in planning and decision making for sustainable ecosystem management through the development of case studies, guidelines and dissemination. Rudolf de Groot, Associate Professor with the Environmental Systems Analysis Group of Wageningen University, will be the Global Thematic Leader for this theme. He has been actively involved in shaping the concept of ecosystem services. Most notably he is co-author of a much cited publication in 'Nature' with Costanza et al. 1997, on the "Total value of the world's ecosystem services and natural capital" and from March 2002 – March 2005 was one of the Coordinating Lead Authors of the 'Millennium Ecosystem Assessment' <http://www.millenniumassessment.org/en/index.aspx>. Key questions for this CEM

theme will be how to measure the importance (value) of ecosystem services, how to identify the users/beneficiaries of ecosystem services and involve them to maintain ecosystem services, and communicating the knowledge of ecosystem services and values. Further guidelines and handbooks for ecosystem service assessment, valuation and financing will be developed in collaboration with other IUCN programmes and regional offices and it is aimed to further facilitate the access to available information. More information is available at the following websites: <http://www.iucn.org/themes/ceem/ourwork/ecservices/index.html>, <http://www.millenniumassessment.org/> and <http://www.naturevaluation.org/>

- The Canadian government has successfully established land use controls for sensitive ecosystems in several areas of British Columbia using tools developed for ecosystem inventory and stewardship. The objectives of the tool 'Sensitive Ecosystem Inventory' are to provide scientific information in support of sound land management decisions, to encourage wildlife conservation while to promote good land stewardship. The Stewardship Series is an award-winning series of publications offering land and watershed stewardship information to private landowners, developers, planners, local governments and the public. More information on: <http://www.pyr.ec.gc.ca/EN/Wildlife/habitat/tools.shtml>.

- There is a new website on long-term soil experiment: <http://ltse.nicholas.duke.edu/> With long-term soil experiments it can be observed how soils change over years and decades to centuries, and how soils interact with global changes over these time scales: chemically, biologically, and physically. Currently, there are more than 125 experiments in the inventory – more are wanted.

- Papers from a Special Issue of Agriculture Ecosystems and Environment: Environmental Services and Land Use Change: Bridging the Gap between Policy and Research in Southeast Asia. Tomich, TP, van Noordwijk, M, and Thomas, DE eds., Vol. 104/1 (2004), can now be downloaded as pdfs from: <http://www.asb.cgiar.org/AgEE.htm>



Cormorants and grey egrets nest in coastal forests near Juodkrante, Lithuania. The cormorants nest in the tops of trees and the egrets on side branches. Their highly acidic wastes kill the trees, fertilize the sandy soil, and change species composition.

FY 2006 Publications (* denotes new publication this month)

Refereed Journals and Book Chapters

Jordan, L., Daniels, R.F., Clark, A. III, He, R. 2005. Multilevel nonlinear mixed-effects models for the modeling of earlywood and latewood microfibril angle. *Forest Science* 51(4): 357-371.

Liu, Y.-Q., Fu, R., Dickinson, R. 2005. Smoke aerosols altering South American monsoon. *Bulletin American Meteorological Society* 86(8): 1062-1063.

Qu, J., Hao, X., Yang, R., Sommers, W., Dasgupta, S., Bhoi, S., Kafatos, M., **Liu, Y.-Q., Achtemeier, G., Riebau, A.R., Coronado, P.** 2005. Bridging Earth observations: remote sensing measurements, fire modeling, and air quality decision support system in the eastern United States. *Earth Observation Magazine* 14 (6).

***Reitz, R.** 2005. Forests and people: The symbiotic relationship. Pp. 89-93 *In American Perspectives on the Wildland/Urban Interface. The National Wildland/Urban Interface Fire Program*; 113 p.

Rhy, Soung-Ryoul, Chen, Jiquan, Crow, Thomas R., **Saunders, Sari. C.** 2004. Available fuel dynamics in nine contrasting forest ecosystems in North America. *Environmental Management* Vol. 33, Supplement 1, pp. 87-107.

Saunders, S.C., J. Chen, T.D. Drummer, E.J. Gustafson, and K.D. Brososke. 2005. Identifying scales of pattern in ecological data: A comparison of lacunarity, spectral and wavelet analyses. *Ecological Complexity* 2: 87-105.

Schulte, Lisa A. and Mladenoff, David J. 2005. Severe wind and fire regimes in northern forests: Historical variability at the regional scale. *Ecology*, 86(2): 431-445.

***Varner, J.M. III, Gordon, D.R., Putz, F.E., Hiers, J.K.** 2005. Restoring fire to long unburned *Pinus palustris* ecosystems: Novel fire effects and consequences for long-unburned ecosystems. *Restoration Ecology* 13(3): 536-544. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Proceedings and Reports

***Brockway, D.G., Outcalt, K.W., Tomczak, D.J., Johnson, E.E.** 2005. Restoration of longleaf ecosystems. USDA Forest Service Southern Research Station General Technical Report SRS-83, Asheville, NC; 34 pp.

***Liu, Y.-Q.** 2005. Spatial relationships between SST and U.S. Wildfires, *Proceedings of the Sixth Fire and Forest Meteorology Symposium*, 25-27 October 2005, Canmore, AB, Canada, Paper 6.2, P1-6 (available in CD). http://ams.confex.com/ams/6FireJoint/techprogram/programexpanded_302.htm

Schoenholtz, S.H., **Stanturf, J.A., Allen, J.A., Schweitzer, C.J.** 2005. Afforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp. 413-432. In L.H. Fredrickson, S.L. King, and R. M. Kaminski, eds. *Ecology and Management of Bottomland*

Hardwood Systems: The State of our Understanding. University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10. Puxico, MO.

Abstracts and Posters

Callaham, M.A., Richter, D.D., Hofmockel, M. 2005 Long-term land use effects on soil invertebrate communities in Southern Piedmont soils. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

Outcalt, K.W., Wade, D. 2005. Response of a mixed longleaf (*Pinus palustris*) and loblolly pine (*Pinus taeda*) community to long-term dormant season prescribed burning. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

***Stanturf, J.A., Burbridge, P.R., Gardiner, E.S., Perdue, J.H.** 2005. Disturbance in the face of climate change: Incorporating disturbance into management of coastal forests. International Workshop on the Scale of Natural Disturbances from Tree to Stand; 29 September to 1 October 2005, Palanga, Lithuania; Lithuanian Forest Research Institute, Kaunas, Lithuania. [Abstract]

From the Cover (Masthead) - Southern Trees.



Adapted from Important Forest Trees of the Eastern United States



Damage to dune vegetation from people-trampling led to this wind-eroded blowout.



Upcoming Events:

2005		Asheville, NC; contact Tom Waldrop	
*Oct 6-7	Fall 2005 Southeastern Hardwood Forestry Group Meeting, Abingdon, VA; contact peggyanderson@fs.fed.us	Jan 29-Feb 2	American Meteorological Society Annual Meeting, Atlanta, GA; http://www.ametsoc.org/meet/annual/
Oct 9-13	2nd International Conference on Mechanisms of Organic Matter Stabilization and Destabilization in Soils, Asilomar California, http://wwwdata.forestry.oregonstate.edu/SoilConf	Jan 8-12	"Ecology in an Era of Globalization: Challenges and Opportunities for Environmental Scientists in the Americas," Merida, Yucatan, Mexico; www.esa.org/mexico
Oct 15-20	International conference on "Metal fluxes and their stress on terrestrial ecosystems," Centro Stefano Franscini, Monte Verità, Ascona, Switzerland; http://www.waldschutz.ch/bioindic/monte_verita/	Feb 27-Mar 1	Central Hardwood Forest Conference, Knoxville, TN. http://fwf.ag.utk.edu/central/
Oct 17-19	23rd Tall Timbers Fire Ecology Conference "Fire In Grassland and Shrubland Ecosystems", Bartlesville, OK; http://www.talltimbers.org	March 27-30	"Fuels Management -- How to Measure Success" conference sponsored by the International Association of Wildland Fire (IAWF), Portland, OR; www.iawfonline.org
*Oct 18-	Fire and Fire Surrogate meeting SMIC at Solon Dixon Forestry and Education Center, Andalusia, AL. Outcalt, Outcalt, Waldrop to present and present.	Mar 29-Apr 2	American Society Environmental History Annual Meeting, St. Paul, Minnesota; http://www.h-net.org/~environ/ASEH/conferences.html
Oct 19-23	Society American Foresters Annual Meeting, Ft. Worth, TX, Outcalt to attend and present.	Apr 8-12	International Conference on Hydrology and Management of Forested Wetlands, New Bern, North Carolina; http://www.asae.org/imis/meeting/forestdcall.cfm
*Oct 25-27	Georgia Prescribed Fire Short Course, Brender Demonstration Forest; http://www.gactr.uga.edu/conferences/forestry	May 21-24	Challenges in Coastal Hydrology and Water Quality, Baton Rouge, Louisiana; http://www.cce.lsu.edu/facultyStaff/Singh_Ve_jay/index.html
Oct 25-27	The Sixth Fire and Forest Meteorology Symposium, Canmore, AB, Canada. Liu to attend.	Jun 5-9	Fourth International Poplar Symposium, "Meeting the Needs of a Growing World through Poplar and Willow Science: Combining Traditional and Novel Approaches in the Genomic Era," Nanjing, China, IUFRO Poplar and Willow Working Party 2.08.04; http://ips2006.njfu.edu.cn/
Oct 27	Workshop on Fuels Treatments and Restoration of Longleaf Pine, Solon Dixon Forestry and Education Center, Andalusia, AL; contact Rhett Johnson, johnsee@auburn.edu	Jul 9-15	18th World Congress of Soil Science, in Philadelphia, PA http://www.18wcss.org
*Nov 1-3	Joint Fire Science Program Principal Investigators meeting; was to be in New Orleans; Outcalt, Waldrop, and O'Brien to attend and present in San Diego.	Aug 6-11	Eighth International Conference on Mercury as a Global Pollutant Madison, WI; http://www.mercury2006.org/ ; DiCosto to attend and present paper
Nov 6-10	Soil Science Society of American Annual Meeting, Salt Lake City, UT	Aug 8-10	Forest and Water in a Changing Environment Beijing, China; Chinese Academy of Forestry, Beijing Forestry University and Southern Research Station.
*Nov 10-12	Eastern Forest Restoration Conference, Black Mountain, NC; Stanturf invited to speak http://www.safc.org/resources/easternrestorationconferencehome.htm .	Oct 10-13	Conference on "Sustainable Forest Management with Fast Growing Plantations", Charleston, SC; contact Dave Wear dwear@fs.fed.us
Nov 7-11	IUFRO Tree Biotechnology 2005 Meeting, Pretoria, South Africa www.iufro.up.ac.za .	Oct 25-29	Society American Foresters Annual Meeting, Pittsburgh, PA
Nov 14-16	"Climate Science in Support of Decision making" conference, Arlington, Virginia; www.climatescience.gov/workshop2005/papers/index.php?authorsInstructions=1 .	Oct 23-27	Knowledge management in forestry conference, sponsored by KnowForAlp, hosted by Forest Research Institute Baden Württemberg, Freiburg, Germany
Nov 15-17	Fire in Eastern Oak Forests: Delivering Science to Managers, Ohio State University, Columbus, OH; contact Matt Dickinson mbdickinson@fs.fed.us	Nov 12-16	Soil Science Society of American Annual Meeting, Indianapolis, IN; http://www.indy.org
Dec 5-10	Forest Ecosystems in the Caribbean: Ecology to Development (from Basic Knowledge to Sustainable Management), Martinique, West Indies	Nov 13-17	3rd International Fire Ecology and Management Congress, San Diego, CA; http://emmps.wsu.edu/firecongress/
2006			
Jan 24-25	"Fire and Fire Surrogate Treatments for Fuel Reduction in Eastern Hardwood Forests – A Workshop for Land Managers,"		

Upcoming Events:

2007

- Feb 26-Mar 1 14th Biennial Southern Silvicultural Research Conference, Savannah, GA;
- Summer 6th North American Forest Ecology Workshop, to be held in British Columbia
- Oct 24-28 Society American Foresters Annual Meeting, Portland, OR.
- Nov 4-8 Soil Science Society of American Annual Meeting, New Orleans, LA; <http://www.neworleanscvb.com>

2008

- Nov 5-9 Society American Foresters Annual Meeting, Reno, NV.



Recent meeting at the Joseph W. Jones Ecological Research Center in Newton, Georgia.

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GPRA -Accomplishment

Category	FY 2004 Total	FY 2005 Total	FY 2006 Total
Number of Refereed Journal Publications	20	21	8
Number of Non-Refereed Publications (include abstracts)	89	60	6
Number of Publications (refereed + non-refereed)	109	81	14
Number of Tours	41	40	7
Number of Short Courses/Training	20	13	0
Number of Invited Presentations to Scientific Organizations	12	7	2
Number of Invited Presentation to Lay Organizations	30	32	6
Volunteer Presentations to Scientific Organizations (non-GPRA)	42	50	6
Number of Technology Transfer Activities (other than above)	105	132	19
Outside Funding	\$2,610,574	\$3,688,734	\$0

SRS-4104 Project Leader's Report

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